

REMARKS/ARGUMENTS

The Applicant originally submitted Claims 1-40 in the application. The Examiner has indicated that Claims 18-24 are allowable and that dependent Claims 2, 5-14, 17, 26, 28-38 and 40 would be allowable if rewritten in independent form. (Examiner's Action, pages 5-6). In the present response, the Applicant has amended Claims 1-2, 5-6, 17-18, 25-26, 28, 30 and 39-40 and added Claims 41-67. No claims have been canceled. Claims 1-67, therefore, are currently pending in the application.

I. Formal Matters and Objections

The Examiner has objected to the drawings as being informal. In response, the Applicant submits formal drawings and respectfully requests the Examiner to remove the objection of the drawings.

II. Rejection of Claims 1, 3, 15-16, 25, 27 and 39 under 35 U.S.C. §102

The Examiner has rejected Claims 1, 3, 15-16, 25, 27 and 39 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Application Publication No. 2002/0118702 to Turner, *et al.* (Turner). The Applicant respectfully disagrees.

Turner is directed to an improved encoding and signal processing scheme for extending the normal range of digital communications transported over a two-wire telephone wireline channel. (Page 1, paragraph 2). The signal processing scheme includes reduced signal-to-noise ratio signal processing techniques such as using a Tomlinson precoder that weights a Pulse Amplitude

Modulation (PAM) encoded signal. (Page 2, paragraphs 14-15). The Tomlinson precoder includes an adder and a modulo unit that adjusts the output of the adder so that the output of the modulo unit falls within the coding range of the PAM signal. (Page 2, paragraph 16).

The modulo unit does not utilize an index to a constellation of levels chosen for a precoder wherein the constellation of levels includes a basic constellation of levels and a set of levels outside the basic constellation of levels such that the amplitude of a mapped constellation signal is limited as recited in independent Claims 1, 25 and 39. Instead, the modulo unit adjusts the actual values of the adder output based upon integral multiples of the magnitude of the range of the PAM coding space. (Page 5, paragraph 45). More specifically, the integral multiples are added or subtracted to bring the adder outputs within range of the one-dimensional signal coding space of the PAM signal. (Page 3, paragraph 23).

Furthermore, the modulo unit of Turner does not utilize an index to a constellation of levels but adjusts the outputs using a constant integral multiple value. The constant integral multiple value, however, is not an index to a constellation of levels as utilized in the present invention, but is simply a constant value. The modulo unit of Turner, for example, is not effective for Pulse Code Modulation (PCM) coding since it is not possible to find a set of PCM values and a constant such that each PCM value, when shifted by a constant, is another PCM value. (Page 6 of specification, lines 10-16). On the other hand, the present invention with the index to the constellation of levels including a basic constellation of levels and a set of levels outside the basic constellation is applicable for (PCM) coding where distances between signal levels are not the same.

Therefore, Turner does not disclose each and every element of the claimed invention and as such, is not an anticipating reference. Because Claims 3, 15-16 and 27 are dependent upon Claims

1 and 25, respectively, Turner also cannot be an anticipating reference for Claims 3, 15-16 and 27. Accordingly, the Applicant respectfully requests the Examiner to withdraw the §102(e) rejection with respect to Claims 1, 3, 15-16, 25, 27 and 39 and allow issuance thereof.

Additionally, Turner is not an anticipating reference to new independent Claim 49 and Claims dependent thereon since Claim 49 utilizes an index associated with a constellation of levels that includes a basic constellation of levels and a set of levels outside the basic constellation of levels.

III. Rejection of Claim 4 under 35 U.S.C. §103

The Examiner has rejected Claim 4 under 35 U.S.C. §103(a) as being unpatentable over Turner in view of U.S. Patent No. 6,061,407 to Cherubini, *et al.* (Cherubini). As discussed above, Turner does not teach each and every element of independent Claim 1. Furthermore, Turner does not suggest each and every element of Claim 1 but instead teaches adjusting code outputs of an adder employing a constant value (Page 2, paragraph 16).

Cherubini is directed to transmission systems employing precoding at the transmitter in combination with trellis coding to obtain at the output of the channel trellis-coded signals that are free of intersymbol interference. (Column 1, lines 6-11). Cherubini, however, does not cure the deficiencies of Turner but has only been cited to teach a training mode based on an impulse response. (Examiner's Action , page 5).

Thus, Turner and Cherubini, individually or in combination, fail to teach or suggest the invention recited in independent Claim 1 and Claim 4 which depends thereon. Turner and Cherubini, therefore, do not provide a *prima facie* case of obviousness for Claim 4. Accordingly,

Turner and Cherubini do not render Claim 4 unpatentable and the Applicant respectfully requests the Examiner withdraw the 35 U.S.C. §103(a) rejection and allow issuance thereof.

IV. Conclusion

In view of the foregoing amendment and remarks, the Applicant now sees all of the Claims currently pending in this application to be in condition for allowance and therefore earnestly solicits a Notice of Allowance for Claims 1-67.

A Petition for Extension of Time is included with this communication, along with a check in the sum of \$420.00. ~~The Commissioner is hereby authorized to charge the sum of \$572.00 for additional claims filed herewith and any additional fees connected with this communication or credit any overpayment to Deposit Account No. 08-2395.~~

The Applicant requests the Examiner to telephone the undersigned attorney of record at (972) 480-8800 if such would further or expedite the prosecution of the present application.

Respectfully submitted,

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